The Connected Machine Shop

Building the Digital Thread

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Next phase in the industrial revolution

1st industrial revolution

Water and steam power paved the way for mechanical manufacturing facilities.

2nd industrial revolution

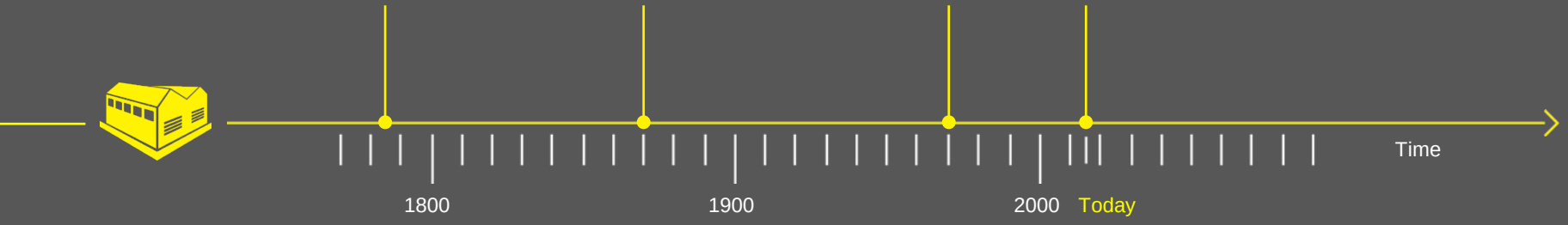
Follows the introduction of electricity-powered mass production based on the division of labor.

3rd industrial revolution

Electronics and IT to advance automation in manufacturing.

4th industrial revolution

Based on Cyber-Physical Systems.



Reducing waste in the Machine Shop

Pre-machining productivity

No way to optimize process and operation planning due to poor input data quality

In-machining and system utilization

<50% utilization of individual machines

Energy flow through machinery

Only 1/3 of energy used for actual forming of manufactured parts

Degree of automation

Key intelligence captured by experienced industrial practitioners who can't process data as effectively as algorithms

Traceability

Only a fraction of data is recorded – and even if it is, it's not often analyzed or used for improvement and prediction

Today’s Machine Shop

Typical value stream

Design and Planning	In-Machining	Post-Machining

Connected Machine Shop

Digital Thread Connecting the Value Stream

Design and planning | In-machining | Post-machining

SANDVIK Coromant

CoroPlus™

The Sandvik Coromant platform for connected solutions

CoroPlus® platform overview

ANALYTICS (MACHINING IN A MANUFACTURING CONTEXT)

CoroPlus® Analytics

CoroPlus® Service Enablement Platform

DESIGN AND PLANNING

CoroPlus® ToolPath

CoroPlus® ToolGuide

CoroPlus® ToolLibrary

MACHINING

CoroPlus® MachiningInsights

CoroPlus® ProcessControl

CoroPlus® ToolingSolutions

TBD

Design

Process Planning

Operations Planning

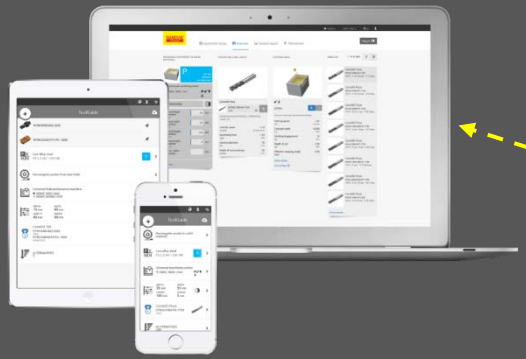
Production Logistics

Machining

Verification

Outbound Logistics

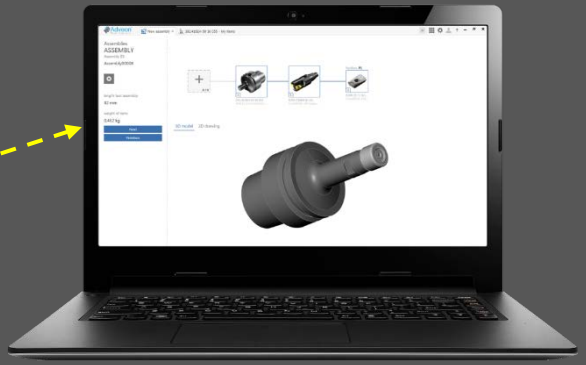
CoroPlus® ToolGuide



CoroPlus™ ToolGuide allows our partners to integrate our cutting data recommendations into their own software.

Open API

CoroPlus® ToolLibrary



ISO 13399

CoroPlus® Tool Library, built on ISO 13399. Open for all cutting tool suppliers.

DMG MORI

APN

NCSIMUL SOLUTIONS

New Integration

TopSolid

Camtek

CAD/CAM Systems

Eureka

Mastercam

ToolsUnited

Delcam

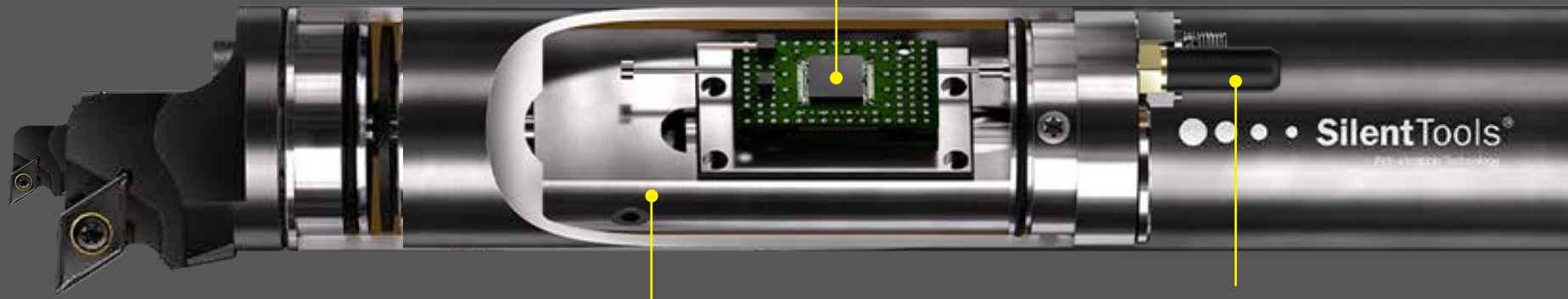
Gc 3D Systems GibbsCAM

edgecam

Silent Tools™+

Damped turning adaptors with embedded connectivity for process optimization

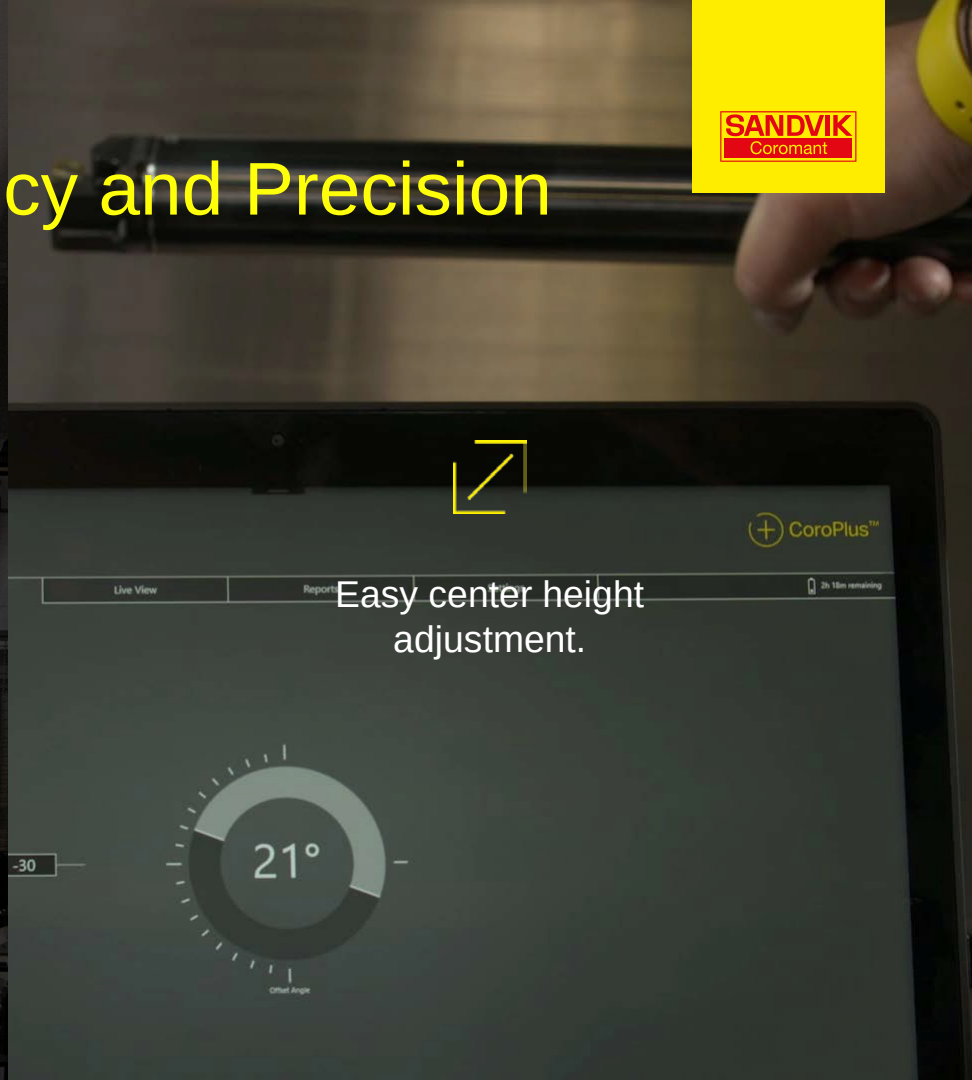
Silent Tools™+ Features



Improved Set-up Efficiency and Precision

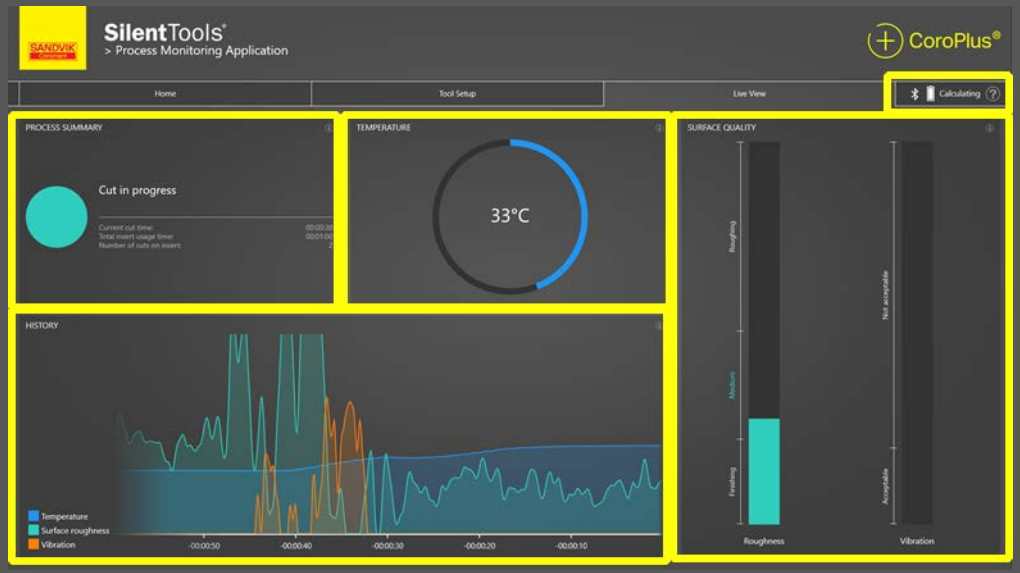
Quick set-up means time savings.

Easy center height adjustment.



Live Process View

- Surface quality indicator
- Vibration indicator
- Damping system temperature
- Battery status
- Cut recording
- In-cut indicator

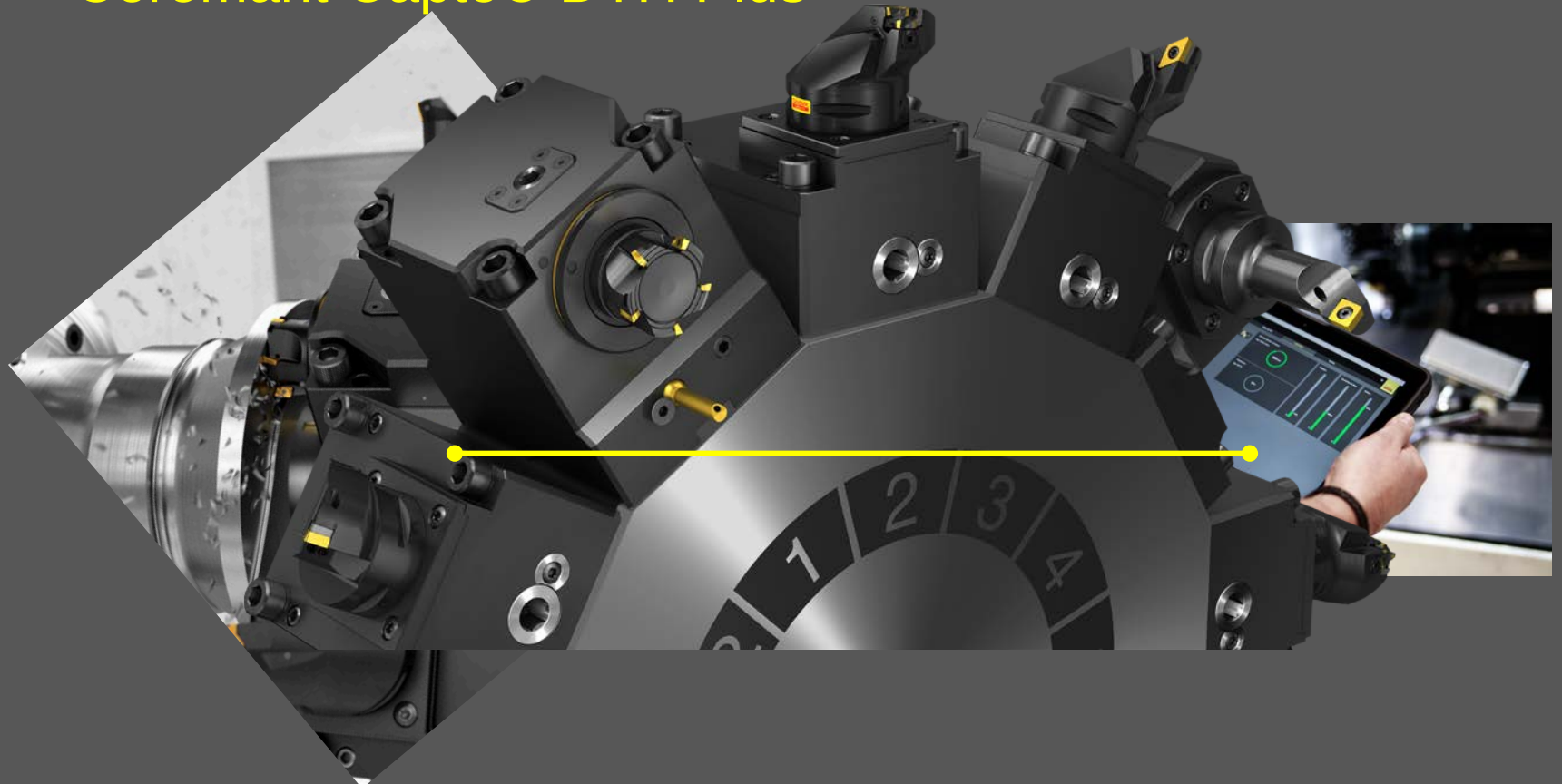


Post Processing and Quality Control

- Record and store cut data
- Quality control
- Trend graph

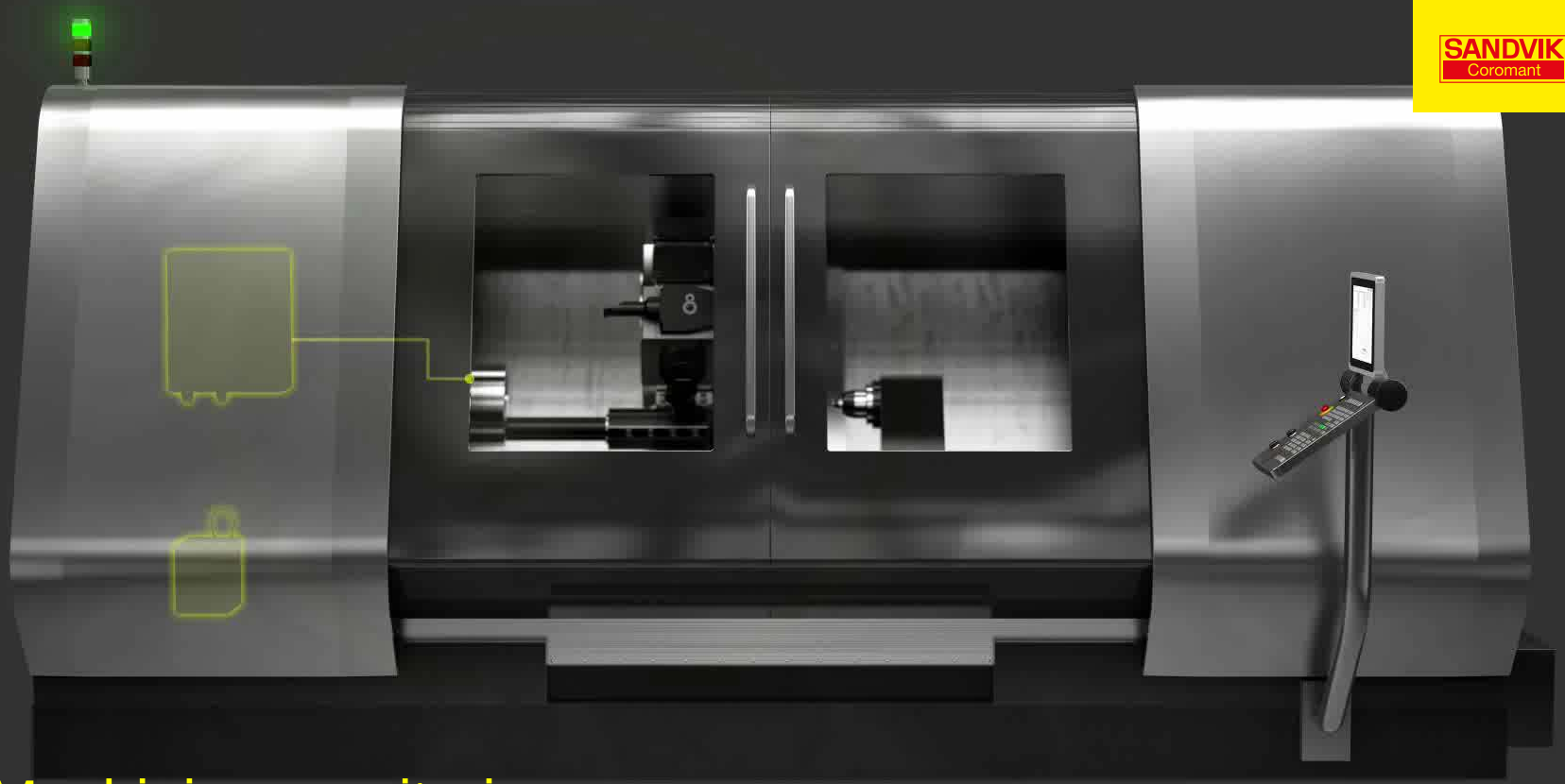
Digital Tooling Solutions

Coromant Capto® DTH Plus



CoroPlus® ProcessControl

Efficiency created through continuous process control



Machining monitoring

CoroPlus® ProcessControl

Collision detector

Tool guard

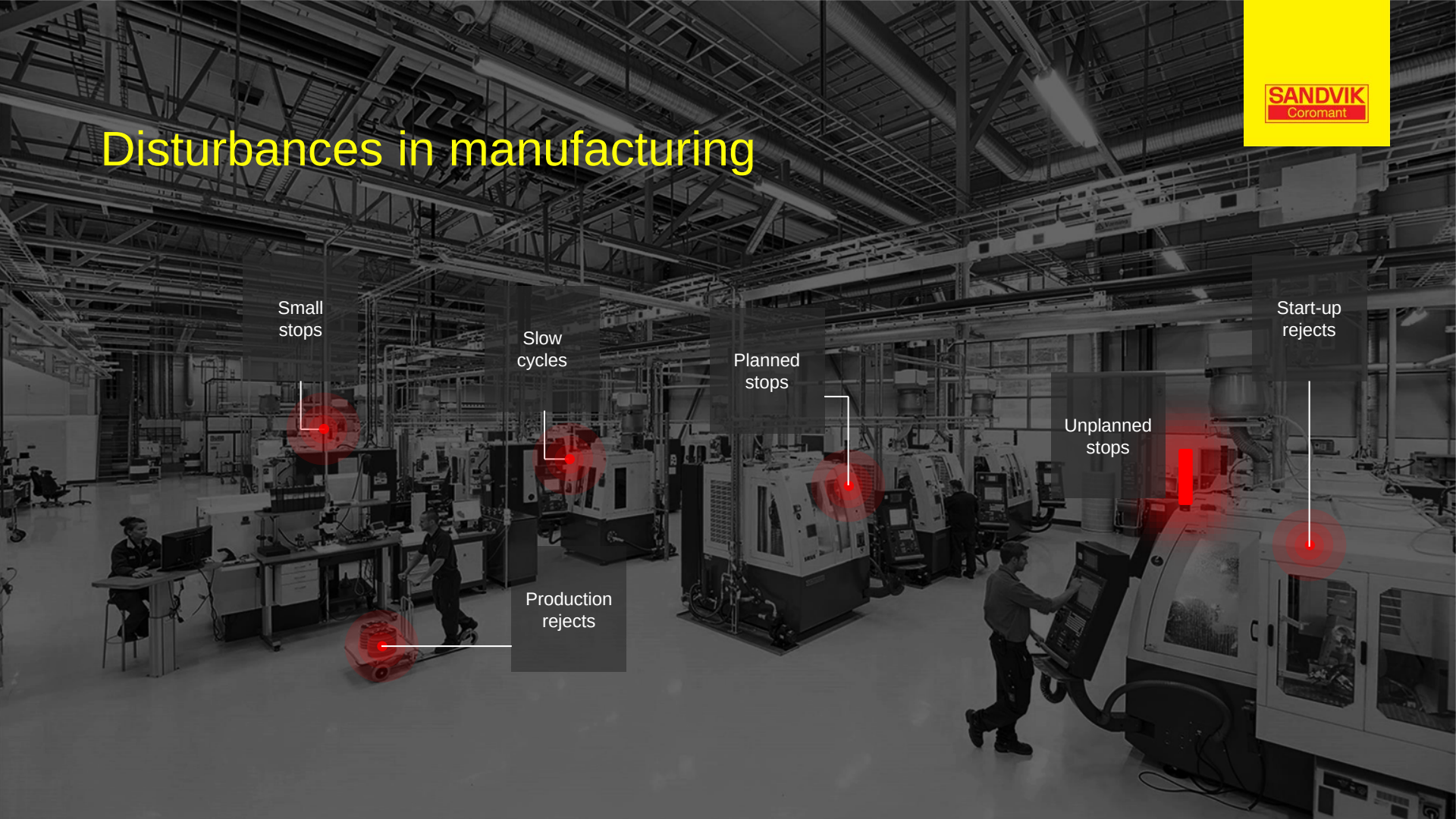
Connected Machine Shop?

Is the Andon light telling you the whole story?

CoroPlus® Machining Insights

From data to actions

Disturbances in manufacturing



Typical methods to address the disturbances

- Manual tracking of utilization and downtime reasons
- Manual data aggregation
- Manual time studies
- Single events
- Resource and time consuming

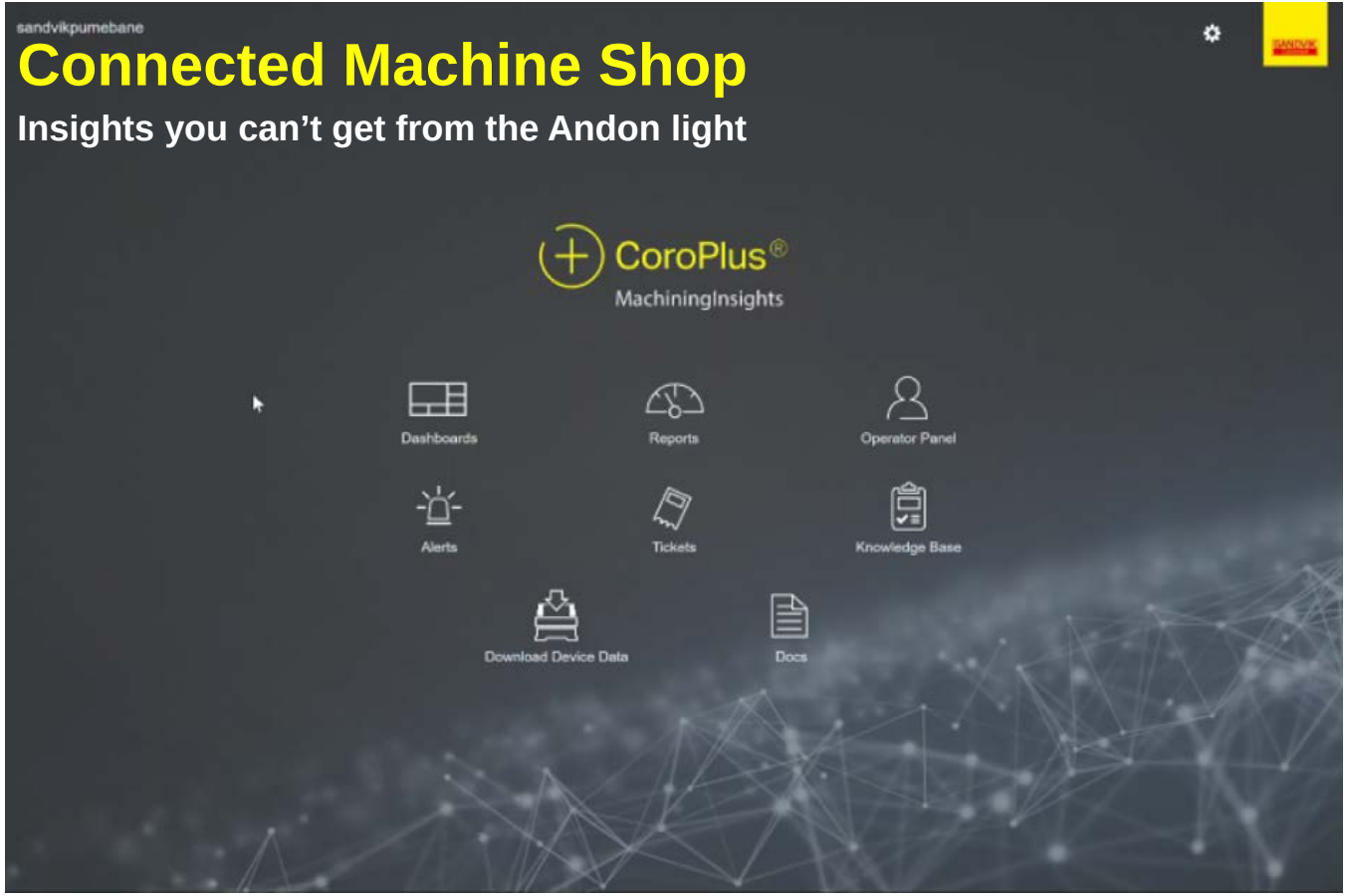
CoroPlus® MachiningInsights

From data to insights

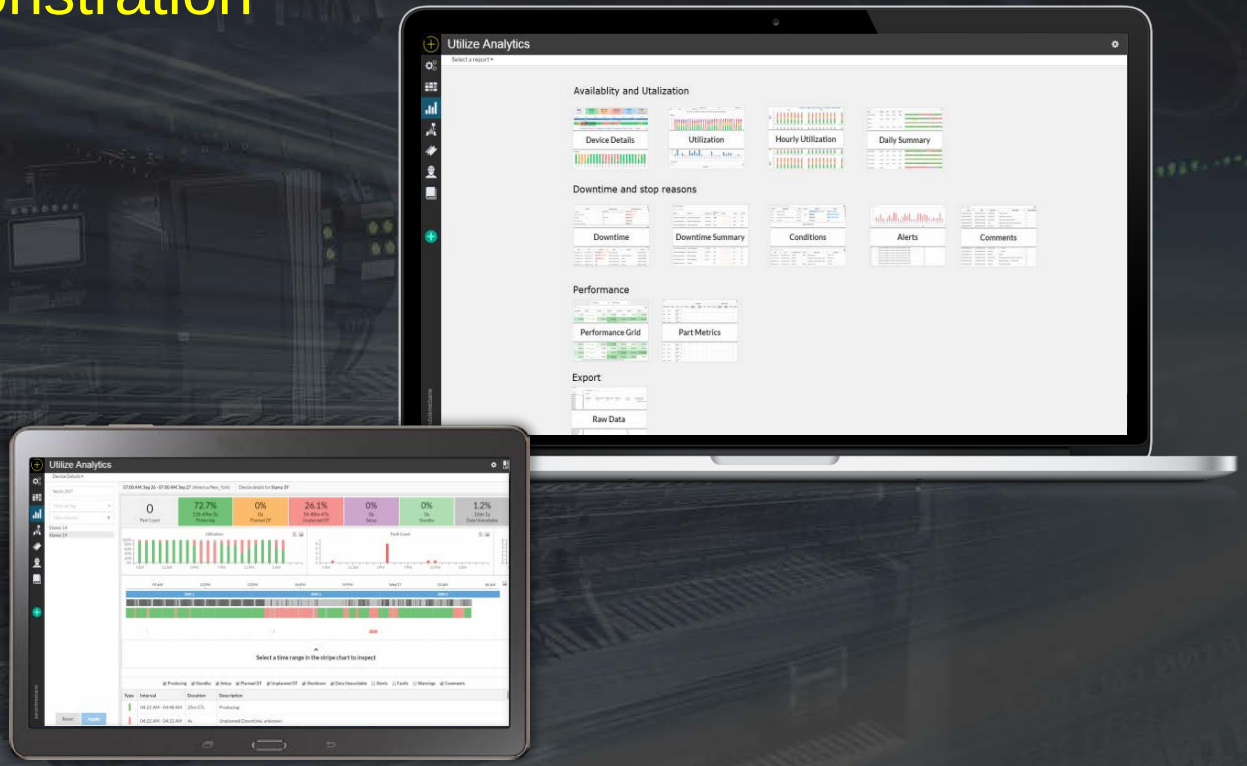
Data collection from machine and operator

CoroPlus® MachiningInsights

CoroPlus® MachiningInsights



Demonstration



Key Take Away

Think Big.
Start Small.
Move Fast.

CoroPlus® Solutions

Digital Machining:
https://www.sandvik.coromant.com/en-us/products/pages/digital-machining.aspx

CoroPlus:
https://www.sandvik.coromant.com/en-us/campaigns/pages/coroplus.aspx?internal_camplink=coroplus&internal_camplink_type=highlight

https://www.youtube.com/watch?v=IRQGx2h9pR4

Design and Planning:
https://www.sandvik.coromant.com/en-us/products/Pages/design-and-planning-solutions.aspx

https://www.youtube.com/watch?v=nxnpbXMyCqI

https://www.youtube.com/watch?v=vJHST7j4lyo

https://www.youtube.com/watch?v=wW7Gj35tgPo

In-Machining:
https://www.sandvik.coromant.com/en-us/products/Pages/in-machining-solutions.aspx

ProcessControl:
https://www.sandvik.coromant.com/en-us/products/coroplus-processcontrol/

https://www.youtube.com/watch?v=nfRjLPs3py0&t=25s

MachiningInsights:
https://www.sandvik.coromant.com/en-us/products/Pages/coroplus-machininginsights.aspx

https://www.youtube.com/watch?v=nfRjLPs3py0&t=25s

ProcessControl:
https://www.sandvik.coromant.com/en-us/products/coroplus-processcontrol/Pages/default.aspx

Silent Tools Plus:
https://www.sandvik.coromant.com/en-us/products/silent_tools_turning/Pages/silent-tools-plus.aspx

https://www.youtube.com/watch?v=_8izfcfOGtI&t=11s

Coromant Capto Plus:
https://www.sandvik.coromant.com/en-us/products/coromant_capto/Pages/coromant-capto-plus.aspx

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